

NOVEMBER/DECEMBER 2025

23UEL21 — ANALOG ELECTRONICS

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Define biasing.
2. Define thermal run away in a transistor.
3. List the uses of FET.
4. Short notes on BJT.
5. State the Barkhausen criterion.
6. What is positive feedback?
7. Define monostable multivibrator.
8. What is the function of a Schmitt trigger?
9. Write any two applications of Zener diode.
10. Define voltage regulation.



SECTION B — ($5 \times 5 = 25$ marks)

Answer ALL questions.

11. (a) Explain the operation of potential divider bias with neat diagram.

Or

- (b) Draw and explain the DC load line and locate the Q-point of a transistor amplifier.

12. (a) With diagram, explain the construction and working of N-channel JFET.

Or

- (b) Discuss the differences between FET, BJT and MOSFET in detail.

13. (a) Explain the operation of phase shift oscillator.

Or

- (b) Describe the frequency derivation of Wien bridge oscillator.

14. (a) With circuit diagram, explain the operation of Astable multivibrator using transistor.

Or

- (b) Describe the design and operation of a Schmitt trigger circuit.

15. (a) Discuss the working of Zener diode as a voltage regulator.

Or

- (b) Write a short note on fixed voltage regulator ICs.

SECTION C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Describe various methods used for transistor biasing.

17. Draw and explain the output characteristics of MOSFET.

18. With neat diagram, explain the working of Hartley oscillator. Also derive its frequency equation.

19. Discuss the operation of monostable multivibrator with block diagram.

20. With neat circuit diagram, explain the working of variable voltage regulator using ICs.

